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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,626	03/29/2004	Bradley C. Aldrich	MP1509	3477

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HARNESS, DICKEY & PIERCE P.L.C.
5445 CORPORATE DRIVE
SUITE 200
TROY, MI 48098

EXAMINER	
CRUZ, IRIANA	
ART UNIT	PAPER NUMBER
2625	
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12/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/812,626	ALDRICH ET AL.	
	Examiner	Art Unit	
	IRIANA CRUZ	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18,24-27 and 32-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,24-27 and 32-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-18 and 24-27 and 32-33 have been considered but are moot in view of the new ground(s) of rejection.

2. Applicant's arguments filed on 10/09/2009 have been fully considered but they are not persuasive. Applicant argues that "Reitan does not show, teach or suggest that, based on the curvature of the transfer function, the sample inputs are distributed so that more sample inputs are associated with a first region of the transfer function than a second region of the transfer function". Examiner respectfully disagrees. Reitan does not limit in any way how the sample inputs are distributed so to get a desired value. Reitan describes that sufficient number of sample points on reference film is required to reveal any nonlinearities overall small ranges of input outputs to measure the uniformity of response the input regions of equal density should be as uniform as possible. Where the samples can be taken in a way where the result will be that the straight edges in the reference image will be converted to curve lines in the sensed image. Narrow regions of interest are defined within the bar spacing regions so that the region of interest stays completely within desired features. A look up table can be utilized within the system perform conversions and achieve desired sampling distribution (See cited art in Reitan and Figure 8). Therefore Look up tables used to convert pixel quantities, where calibration, adaptation and various representations can be achieved by fixing the look up table to do most of the sampling on a specified region. An image may contain a broad range of densities (column 16, lines 6-10) where just a specific region of interest

can be chose to be the specific interest of densities wanted (a long and narrow region of interest is assigned to the center of the digital image, column 18, lines 20-25). Then the look up table is fixed (save new LUT files, fig. 14C) to take the majority of samples on that specified region of interest leaving the other region not chosen as the second region with less samples/no samples; perform conversion of incoming/input pixel/image data to an outgoing/output pixel data set with a desired transfer function (transfer function input sampling distribution depends on the desired regions information). Therefore the data can be manipulated to be based on a specific region of the transfer function (curvature) and based on that region have the distribution of samples in any desired region. Therefore this argument is still proper and this action is made **FINAL**.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-11, 24-27** and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reitan (US Patent Number 5,600,574) in view of Leffel (US Publication Number 2005/0057303 A1).

Regarding **Claim 1**, Reitan'574 shows an image processing device comprising: a look-up table (LUT) storing sample outputs from an output range of a transfer function, wherein the transfer function maps sample inputs from an input

range of the transfer function to the sample outputs, and wherein, based on a curvature of the transfer function **(i.e., the response curve of the transfer function. See Column 16, 8-17 and 35-54, See Column 21, Lines 55-67, Column 22, Lines and also see Figures 9-11)**, the sample inputs being distributed so that more sample inputs are associated with a first region of the transfer function than a second region of the transfer function **(i.e., Look up tables used to transform (transform function) pixel quantities, where calibration, adaptation and various representations can be achieved by fixing the look up table to do most of the sampling on a specified region. An image may contain a broad range of densities (column 16, lines 6-10) where just a specific region of interest can be chose to be the specific interest of densities wanted (a long and narrow region of interest is assigned to the center of the digital image, column 18, lines 20-25). Then the look up table is fixed (save new LUT files, fig. 14C) to take the majority of samples on that specified region of interest leaving the other region not chosen as the second region with less samples/no samples; perform conversion of incoming/input pixel/image data to an outgoing/output pixel data set with a desired transfer function ((transfer function input sampling distribution depends on the desired regions information)). See Column 16, Lines 6-31, Column 17, Lines 26-67, Column 18, Lines 20-55 and Column 21, Lines 55-66 and See Column 22, Lines 5-10)**.

Reitan'574 fails to show the device comprising an address module to calculate an index into the LUT based on image data.

Leffel'303 teaches an address module to calculate an index into the LUT based on image data **(i.e., the look-up table contains an index calculating module. See Paragraphs 45).**

Having the system of Reitan'574 and then given the well-established teaching of the Leffel'303, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system as suggested by the combination of Reitan'574 with the teachings of Leffel'303 by adding an address module to calculate an index into the LUT, in order to improve the systems precision of the system by updating the Look-up table depending on the image data.

Regarding **Claim 2**, Reitan'574 shows an image processing device further comprising an interpolation module to calculate transferred image data using the sample output in the LUT addressed by the index **(i.e., to represent the output samples/image data. See Column 21, Lines 63-66 and See Column 22, Lines 36-44).**

Regarding **Claim 3**, Reitan'574 shows an image processing device further comprising a plurality of additional LUTs, one LUT to correspond to each color channel used by a color space **(i.e., plurality of LUT's. See Column 22, Lines 5-10).**

Regarding **Claim 4**, Reitan'574 shows an image processing device further comprising a color filter to determine a color of the image data and to select one

of the plurality of LUTs based on the determined color **(i.e., filtering. See Column 19, Lines 30-35).**

Regarding **Claim 5**, Reitan'574 shows an image processing device wherein the interpolation module also uses the image data to calculate the transferred image data **(i.e., See Column 13, Lines 24-35)**.

Regarding **Claim 6**, the combination of Reitan'574 and Leffel'303 shows an image processing device wherein the address module calculates the index by accessing a region pointer based on a first part of the image data, and combining the region pointer with a second part of the image data **(i.e., a pointer offsets allow LUT to shift values. See Paragraph 101 in reference Leffel'303)**.

Regarding **Claim 7**, the combination of Reitan'574 and Leffel'303 shows an image processing device wherein the first part of the image data comprises the first two bits of the image data that determine a quartile, the region pointer comprises a quartile pointer that addresses the first sample output mapped from a sample input in the quartile, and the second part of the image data indicates the address of the indexed sample output within the quartile **(i.e., a pointer offset allow LUT to shift values in the necessary way. See Paragraphs 101,107 and 116-117 in reference Leffel'303)**.

Regarding **Claim 8**, the combination of Reitan'574 and Leffel'303 shows an image processing device wherein the transfer function has four regions, the first and second regions each being one of the four regions, and the region pointer identifies with which of the four regions the image data is associated **(i.e., a pointer offset allow LUT**

to shift values in the necessary way. See Paragraphs 101,107 and 116-117 in reference Leffel'303).

Regarding **Claim 9**, Reitan'574 shows an image processing device wherein the transferred image data comprises companded image data **(i.e., compressed to 8 bits. See Column 22, Lines 40-45)**.

Regarding **Claim 10**, Reitan'574 shows an image processing device wherein the transferred image data comprises gamma-corrected image data **(i.e., gamma correction. See Column 22, Lines 40-45 and See Column 32, Lines 23-27)**.

Regarding **Claim 24**, Reitan'574 shows a method comprising: receiving image data **(i.e., the system includes apparatus for image acquisition. See Column 2, Lines 49-55, Column 4, Lines 35-50 and Column 9, Lines 35-50)**, the image data being input for a transfer function the transfer function mapping an input range to an output range **(i.e., mapping of the transfer function. See Column 17, Lines 28-55 and 59-67, Column 18, Lines 20-42)**; using a first section of the received image data to identify a region of the input range of the transfer function to which the received image data belongs **(i.e., regions can be identified based on the interest of the process. See Column 17, Lines 28-45)**; selecting a second section of the received image data based on the identified region **(i.e., regions can be identified based on the interest of the process. See Column 17, Lines 28-45)**; addressing an entry of a look-up table (LUT) using the first and second sections of the image data **(i.e., Look up tables**

used to transform (transform function) pixel quantities, where calibration, adaptation and various representations can be achieved by fixing the look up table to do most of the sampling on a specified region. An image may contain a broad range of densities (column 16, lines 6-10) where just a specific region of interest can be chose to be the specific interest of densities wanted (a long and narrow region of interest is assigned to the center of the digital image, column 18, lines 20-25). Then the look up table is fixed (save new LUT files, fig. 14C) to take the majority of samples on that specified region of interest leaving the other region not chosen as the second region with less samples/no samples; perform conversion of incoming/input pixel/image data to an outgoing/output pixel data set with a **desired transfer function ((transfer function input sampling distribution depends on the desired regions information)). See Column 16, Lines 6-31, Column 17, Lines 26-67, Column 18, Lines 20-55 and Column 21, Lines 55-66 and See Column 22, Lines 5-10)**

Reitan'574 fails to show the device comprising an address module for calculating a transferred image data by using the addressed entry and a residual section of the image data.

Leffel'303 teaches an address module for calculating a transferred image data by using the addressed entry and a residual section of the image data **(i.e., the look-up table contains an index calculating module. See Paragraphs 45, 59, 92, 101 and 106).**

Having the system of Reitan'574 and then given the well-established teaching of the Leffel'303, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system as suggested by the combination of Reitan'574 with the teachings of Leffel'303 by adding an address module to calculate an index into the LUT, in order to improve the systems precision of the system by updating the Look-up table depending on the image data.

With regards to method **Claim 25**, the limitation of the claim 25 are corrected by limitation of claim 9 above. The steps of claim 25 read into the function step of claim 9.

With regards to method **Claim 26**, the limitation of the claim 26 are corrected by limitation of claim 6 above. The steps of claim 26 read into the function step of claim 6.

With regards to method **Claim 27**, the limitation of the claim 27 are corrected by limitation of claim 5 above. The steps of claim 27 read into the function step of claim 5.

With regards to method **Claim 32**, the limitation of the claim 32 are corrected by limitation of claim 24 above. The steps of claim 32 read into the function step of claim 24.

With regards to method **Claim 33**, the limitation of the claim 33 are corrected by limitation of claim 25 above. The steps of claim 33 read into the function step of claim 25.

With regards to method **Claim 34**, the limitation of the claim 34 are corrected by limitation of claim 26 above. The steps of claim 34 read into the function step of claim 26.

5. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Reitan (US Patent Number 5,600,574)in view of Takane (US Publication Number 2002/0030751 A1).

Regarding **Claim 11**, Reitan'574 shows a digital camera for capturing digital video or still images **(i.e., a digital image system electronic camera. See Column 1, Lines 12-15 and 30-31 and See Column 2, Lines 50-54)**, the digital camera comprising: a look-up table (LUT) storing sample outputs from an output range of an image processing transfer function, wherein the image processing transfer function maps sample inputs from an input range of the image processing transfer function to the sample outputs, and wherein, based on a curvature of the transfer function **(i.e., the response curve of the transfer function. See Column 16, 8-17 and 35-54, See Column 21, Lines 55-67, Column 22, Lines and also see Figures 9-11)**, the sample inputs are distributed so that more sample inputs are associated with a first region of the transfer function than a second region of the transfer function **(i.e., Look up tables used to transform (transform function) pixel quantities, where calibration, adaptation and various representations can be achieved by fixing the look up table to do most of the sampling on a specified region. An image may contain a broad range of densities (column 16, lines 6-10) where just a specific region of**

interest can be chose to be the specific interest of densities wanted (a long and narrow region of interest is assigned to the center of the digital image, column 18, lines 20-25). Then the look up table is fixed (save new LUT files, fig. 14C) to take the majority of samples on that specified region of interest leaving the other region not chosen as the second region with less samples/no samples; perform conversion of incoming/input pixel/image data to an outgoing/output pixel data set with a desired transfer function ((transfer function input sampling distribution depends on the desired regions information)). See Column 16, Lines 6-31, Column 17, Lines 26-67, Column 18, Lines 20-55 and Column 21, Lines 55-66 and See Column 22, Lines 5-10).

Reitan'574 fails to show the digital camera comprising a sensor to convert light into image data and a battery to power the sensor and the LUT.

Takane'751 teaches a digital camera comprising a sensor to convert light into image data **(i.e., image sensor to convert light. See Paragraphs** 49) and a battery to power the sensor and the LUT **(i.e., the camera has a battery to give power for all the processing including the use of the LUTs. See Paragraphs 53 and 214).**

Having the system of Reitan'574 and then given the well-established teaching of the Takane'751, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system as suggested by the combination of Reitan'574 with the teachings of Takane'751 by adding a sensor to convert light into image data and a battery to power the

sensor and the LUT, in order to improve the systems performance and superior durability by having a battery to power the system.

Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reitan (US Patent Number 5,600,574) in view of Takane (US Publication Number 2002/0030751 A1) and further in view of Leffel (US Publication Number 2005/0057303 A1).

Regarding **Claim 12**, the combination of Reitan'574 and Takane'751 fails to show a digital camera, further comprising an address module to calculate an index into the LUT based on image data.

Leffel'303 teaches a system comprising an address module to calculate an index into the LUT based on image data **(i.e., the look-up table contains an index calculating module. See Paragraphs 45).**

Having the system of Reitan'574 and then given the well-established teaching of the Leffel'303, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system as suggested by the combination of Reitan'574 with the teachings of Leffel'303 by adding an address module to calculate an index into the LUT, in order to improve the systems precision of the system by updating the Look-up table depending on the image data.

Regarding **Claim 13**, Reitan'574 shows a digital camera, further comprising an interpolation module to calculate transferred image data using the image data and the sample output in the LUT addressed by the index **(i.e., to**

represent the output samples/image data. See Column 21, Lines 63-66 and See Column 22, Lines 36-44).

Regarding **Claim 14**, Reitan'574 shows a digital camera further comprising a plurality of additional LUTs, one LUT to correspond to each color channel used by a color space **(i.e., plurality of LUT's. See Column 22, Lines 5-10).**

Regarding **Claim 15**, Reitan'574 shows a digital camera further comprising a color filter to determine a color of the image data and to select one of the plurality of LUTs based on the determined color **(i.e., filtering. See Column 19, Lines 30-35)**.

Regarding **Claim 16**, the combination of Reitan'574, Takane'751 and Leffel'303 shows a digital camera wherein the address module calculates the index by accessing a region pointer based on a first part of the image data, and combining the region pointer with a second part of the image data **(i.e., a pointer offsets allow LUT to shift values. See Paragraph 101 in reference Leffel'303)**.

Regarding **Claim 17**, the combination of Reitan'574, Takane'751 and Leffel'303 shows a digital camera wherein the transfer function has four regions, the first and second regions each being one of the four regions, and the region pointer identifies with which of the four regions the image data is associated **(i.e., a pointer offset allow LUT to shift values in the necessary way. See Paragraphs 101,107 and 116-117 in reference Leffel'303)**.

Regarding **Claim 18**, Reitan'574 shows a digital camera wherein the image processing transfer function comprises a gamma-correction transfer

function **(i.e., gamma correction. See Column 22, Lines 40-45 and See Column 32, Lines 23-27)**.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IRIANA CRUZ whose telephone number is (571)270-3246. The examiner can normally be reached on Monday-Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

December 22, 2009

/I. C./
Examiner, Art Unit 2625